

## REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of November 14, 2006. Applicants also appreciate the citation of U.S. Patents 5,620,817 to Hsu et al. and 4,965,118 to Koderer et al. In response, all of the claims have been amended extensively to further clarify the patentability over Hsu et al. and Koderer et al. taken singly or in combination with each other or with the various secondary references. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the pending claims for the reasons that now will be described.

### **Please Consider the Ninth Supplemental Information Disclosure Statement**

Applicants filed a Ninth Supplemental Information Disclosure Statement on November 20, 2006, a few days after the mailing of the present Official Action. The Ninth Supplemental Information Disclosure Statement was received and is shown on PAIR. Accordingly, Applicants respectfully request the Examiner to consider the Ninth Supplemental Information Disclosure Statement and the references cited therein, and to return a signed copy of the Form PTO-1449 with the next Patent Office communication.

### **Independent Claims 1 and 21 are patentable over Hsu et al.**

Independent Claims 1 and 21 stand rejected under 35 U.S.C. § 102(b) in view of Hsu et al. However, Claim 1 has been amended to recite a method of fabricating an array of microlenses. In sharp contrast, Hsu et al. relates to the "*Fabrication of Self-Aligned Attenuated Rim Phase Shift Mask*," as noted in Hsu et al. title. Moreover, Claim 1 has been amended to clearly recite scanning a radiation beam at varying amplitude through a substrate that is transparent thereto into a negative photoresist layer on the substrate to image the array of microstructures in a negative photoresist layer. In sharp contrast, in Hsu et al., a radiation beam is flooded through a substrate 10 into and through a layer of negative photoresist 14 as clearly illustrated by arrows 16 of Figure 2 of Hsu et al. and throughout the description thereof.

Flooding can be used because Hsu et al. includes a pattern mask 12 on the substrate thereof.

For at least these reasons, Claim 1 is not anticipated by Hsu et al. Moreover, Claim 1 would not be obvious over Hsu et al. because it would not be obvious to apply techniques for the fabrication of self-aligned attenuated rim phase shift masks to the manufacture of an array of microlenses. Moreover, even if there was some motivation to do so, the techniques used (flooding radiation through a mask versus scanning a radiation beam at varying amplitude) would not be obvious. Finally, there would be no need to perform scanning in Hsu et al., which generally would be more time consuming than flooding, because Hsu et al. includes a pattern mask 12 that allows flooding. The present application is replete with discussions of potential advantages of embodiments of Claim 1. This analysis will not be repeated herein in view of the clear patentability of this claim. For at least these reasons, Claim 1 is also unobvious over Hsu et al.

Dependent Claims 2-13 and 15-18 are patentable at least per the patentability of independent Claim 1 from which they depend. Moreover, many of these claims are independently patentable as will be described in detail below.

Independent Claim 21 has also been amended to recite an array of microlenses and scanning a radiation beam at varying amplitude into a negative photoresist layer and is, therefore, patentable for at least the same reasons that were described above in connection with Claim 1. This analysis will not be repeated for the sake of brevity. Dependent Claims 22-30 and 32-35 are patentable at least per the patentability of Claim 21 from which they depend. Moreover, many of the dependent claims are separately patentable as will be described in detail below.

**Independent Claims 1, 21 and 38 are Patentable over Kodera et al.**

Independent Claims 1, 21 and 28 also stand rejected under 35 USC §102(b) in view of Kodera et al. Kodera et al. relates to "*Flexible Optical Information Recording Medium and Method of Manufacturing the Same*," as noted in the Kodera et al. title, and specifically relates to the fabrication of optical disks of the laser readout type as

noted in the "Technical Field" of Kodera et al., col. 1, lines 6-12. As noted in the Kodera et al. Abstract:

A flexible resin layer, on the surface of which an uneven pattern corresponding to information to be recorded is formed, and a reflection layer formed on the uneven pattern of the resin layer and having light reflectivity are provided to thereby constitute a flexible optical information recording medium. Further, the resin layer is supported by a flexible supporting layer. For manufacturing such a flexible optical information recording medium, a resin liquid, which can be hardened by irradiation of ultraviolet rays or electron rays, is filled between an ultraviolet ray or electron ray transmissible base film serving as the supporting layer and an uneven pattern original block. Ultraviolet rays or electron rays are then irradiated through the base film to harden and give form to the resin liquid on the base film, thereafter to exfoliate it. (Emphasis added).

As clearly illustrated by arrows 150 in Figures 2 and 5 of Kodera et al. and throughout the specification thereof, blanket flooding of ultraviolet radiation 150 is used.

Accordingly, Kodera et al. does not describe or suggest a method of fabricating an array of microlenses as recited in independent Claims 1 and 21, nor does Kodera et al. describe or suggest scanning a radiation beam at varying amplitude into a negative photoresist layer to image the array of microlenses in the negative photoresist layer, as also recited in Claims 1 and 21. For at least these reasons, Claims 1 and 21 are neither anticipated by nor obvious in view of Kodera et al.

Remaining independent Claim 38 also recites a method of fabricating an array of microlenses and also recites scanning a laser beam at varying amplitude through a substrate that is transparent thereto into a negative photoresist layer and is, therefore, also patentable over Kodera et al. for at least the same reasons. The dependent claims are patentable at least per the patentability of the independent claims from which they depend. Moreover, many of the dependent claims are separately patentable as will be described in detail below.

#### **Many of the Dependent Claims are Separately Patentable**

The dependent claims are patentable at least per the patentability of the independent claims from which they depend. Moreover, many of the dependent claims are separately patentable.

For example, Claims 3 and 22 recite the fabrication of a buried array of microstructures in the negative photoresist layer. In sharp contrast, Hsu et al. does not describe or suggest forming a buried structure because, as shown in Figure 2 of Hsu et al., the light 54 extends all the way through the layer of photoresist 14 and the final structure of Hsu et al. Figures 3 and 4 clearly show photoresist pedestals 15 that are not buried. Similarly, in Koder et al., the features are also not buried in the photoresist layer. Accordingly, these claims are separately patentable. Similar analysis applies to dependent Claims 4-6 and 23-24.

Dependent Claim 8 recites rotating a cylindrical platform while simultaneously axially rastering a radiation beam at varying amplitude. Even if the rollers 220 of Koder et al. are considered a cylindrical platform as alleged at Page 3 of the Official Action, axially rastering across a layer that is on the cylindrical platform is clearly not described or suggested. Rather, as shown in Koder et al. at Figure 5, the radiation 150 is flooded between the rollers 220. Accordingly, Claim 8 is independently patentable. Similar analysis applies to Claims 25 and 40.

Moreover, Claim 9 recites simultaneous translating the cylindrical platform and/or radiation beam axially. Respectfully, Koder et al. does not describe, illustrate or suggest any such axial translation. Similar analysis applies to Claims 26 and 41.

Claim 10 recites continuously varying the amplitude of the radiation beam. Such continuous variation is not described or suggested in Koder et al. Moreover, Hsu et al. at column 3, lines 15-35 merely describes that the flood light intensity and exposure time may be adjusted, but does not describe or suggest continuously varying amplitude during scanning, as recited in Claim 10. Similar analysis applies to Claims 27 and 42.

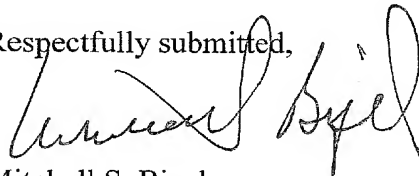
Finally, Claims 11, 12 and 13 recite the fabrication of large microlens arrays that are at least one square foot in area (Claim 11) that are scanned for at least about an hour (Claim 12) and/or that contain at least one million microlenses (Claim 13). The fabrication of these large-scale microlens arrays is not described or suggested in any of the cited references. In particular, the cited secondary reference Adler (U.S. Patent 4,087,300) describes a process for producing a metal plastic laminate that is used, for example, in fabricating metal-clad printed circuit boards. There is no

description or suggestion of fabricating large-scale microlens arrays. Moreover, the Georger, Jr. et al. secondary reference (U.S. Patent 5,342,737) describes the formation of high aspect ratio metal microstructures and does not apply to the production of microlens arrays. The present application describes in detail, in the Background of the Invention section, scaling problems that may be encountered in attempting to fabricate large arrays and only the present application appears to be able to solve these scaling problems. Accordingly, these claims are also independently patentable. Similar analysis applies to Claims 28-30.

### **Conclusion**

The claims have been amended extensively to clarify the patentable distinctions over the cited references. As shown above, the independent claims are neither anticipated by nor obvious over the cited references. Moreover, many of the dependent claims are separately patentable. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the present application.

Respectfully submitted,

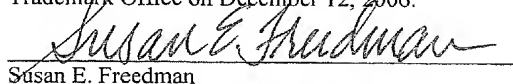


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### **CERTIFICATION OF ELECTRONIC TRANSMISSION UNDER 37 CFR § 1.8**

I hereby certify that this correspondence is being transmitted electronically to the U.S. Patent and Trademark Office on December 12, 2006.



Susan E. Freedman  
Date of Signature: December 12, 2006